IJAREEIE

e-ISSN: 2278-8875
p-ISSN: 2320-3765

International Journal of Advanced Research in Electrical, Electronics and Instrumentation Engineering

Volume 13, Issue 4, April 2024

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 8.317

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 4, April 2024||

| DOI:10.15662/IJAREEIE.2024.1304027 |

Implementation of a Discrete Design for Smart Farming System Using IoT for Efficient Crop Growth with Fertilizer Dispenser

Mrs.S. Laxmi[1], M.Thanga lakshmi[2], M.Sakthi Renuka[3], K.Sura Ebanitha[4]

Assistant Professor, Department of EEE, Francis Xavier Engineering College, Tirunelveli, Tamilnadu, India[1]

UG Scholars, Department of EEE, Francis Xavier Engineering College, Tirunelveli, Tamilnadu, India[2,3,4]

ABSTRACT: This IOT based Agriculture monitoring system makes use of wireless sensor networks that collects data from different sensors deployed at various nodes and sends it through the IOT Technology. This smart agriculture using IOT system is powered by Arduino with Temperature sensor, Moisture sensor, water level sensor, DHT11 Sensor, water motor, buzzer and node MCU. When the IOT based agriculture monitoring system starts it checks the water level, humidity and moisture level. It sends SMS alert on the phone about the levels. Sensors sense the level of water if it goes down, it automatically starts the water pump. If the temperature goes above the level, water motor starts. When any animal reaches the agricultural land, the buzzer we attached to the Arduino will make the sound alert system. So that the animal will leave the land. Finally, all data will be transferred to the IOT cloud system using node MCU module.

KEYWORDS: Internet of Things, Agriculture, GSM Module, Think speak, Ultrasonic sensor.

I. INTRODUCTION

The Internet of things (IOT) is remodeling the agriculture enabling the farmers with the wide range of techniques such as precision and sustainable agriculture to face challenges in the field. IOT technology helps in collecting information about conditions like weather, moisture, temperature and fertility of soil, crop online monitoring enables detection of weed, level of water, pest detection, animal intrusion in to the field, crop growth, agriculture. IOT leverages farmers to get connected to his farm from anywhere and anytime. Wireless sensor networks are used for monitoring the farm conditions and micro controllers are used to control and automate the farm processes. To view remotely the conditions in the form of image and video, wireless cameras have been used. A smart phone empowers farmer to keep updated with the ongoing conditions of his agricultural land using IOT at any time and any part of the world. IOT technology can reduce the cost and enhance the productivity of traditional farming.

Agriculture is major source of income for the largest population in India and is major contributor to Indian economy. In past decade it is observed that there are not much crop development in agriculture sector. Food prices are continuously increasing because crop rate declined. There are number of factor which is responsible for this it may be due to water waste, low soil fertility, Fertilizer abuse, climate change or diseases etc. It is very essential to make effective intervention in agriculture and the solution is IOT in integration with wireless sensor network. Internet of things (IOT) is a method of connecting everything to the internet- it is connecting object or things (such as car, home, electronic devices, etc. ...) which are previously not connected with each other main purpose of IOT is ensuring delivery of right information to right people at right time. In agriculture irrigation is the important factor as the monsoon rain falls are unpredictable and uncertain.

II. OBJECTIVE

- To deploy solar energy based three phase voltage source inverter fed grid.
- To use a solar energy-based system to maintain a consistent output voltage to the load or grid.
- To develop a PV system with a Neuro Fuzzy-based MPPT algorithm and a Switched Z source Boost converter.

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 4, April 2024||

| DOI:10.15662/IJAREEIE.2024.1304027 |

III. ADVANTAGES

The project is built from easily available and reasonably priced components. Therefore, the cost is reasonable and maintenance is easy.
Using this project, the status of crops can be viewed remotely on a smartphone or laptops using the internet. This helps to keep the farmer up to date even when he is away.
The project keeps the farmer updated regarding the status of the crop via SMS notifications. This keeps the farmer updated and conscious about the status of his crop.
Additional agricultural, chemical and weather-related sensors can be added to the system in order to achieve more effective and accurate monitoring from the smart system.

IV. GLIMPSE OF LITERATURE ANALYSIS

Maximum Power Point Tracking Approaches for Photovoltaic Power Systems: A Comparative Analysis (B.Subudhi, R.Pradhan, 2013). The DC to DC converter in this work receives solar power; as a result, the load receives a constant voltage. In this study, various MPPT approaches are tested. The hills clamping algorithm ultimately pulls the most power from the panel. It is not an effective one without a DC to DC converter, and its ripple factor is significant. Voltage for the grid cannot be supplied only by solar networks. A grid-supported solar energy conversion system with an adjustable dc link voltage for common point of interconnection (CP) voltage changes is presented by Bhim Singh (2015) et al. To improve the dynamic response for meteorological changes and CPI voltage volatility, a feed-forward term for the solar PV contribution is also used.

V. EXISTING SYSTEM

Existing systems based on the different technologies and also focuses on generic automated irrigation system based on WSN with GSM-ZigBee for remote monitoring and controlling devices. The objective is to make use of wireless sensor network and communication technology such as ZigBee and GSM in industrial field to make low-cost automated irrigation system to monitor the condition of the soil and to lower the energy consumption.
The system helps the farmer to monitor and control the parameters of the soil such as air temperature, humidity, soil moisture. At any abnormal condition, the farmer is informed and will be able to take actions remotely by using GSM. Due to its lower energy consumption and low cost, the system has the potential to be useful in semiarid or arid areas.

VI. PROPOSED SYSTEM

The whole Arduino, Node MCU, Soil Moisture sensor, water level sensor, DHT 11 Sensor. Soil Moisture sensor measures moisture content of the soil.
When soil moisture sensor goes low the water motor will be on and exceeds a defined level, the water motor will off automatically. When the water level is low in the well it will automatically detected by ultrasonic sensor and the details about the water in the well are updated in a webpage.
The user can monitor and control parameters through webpage. This device is very much helpful to the farmers to monitor and control environmental parameters at their farms. The farmers need not to go their farms.
All sensor's details uploaded to the IOT cloud storage system with updated datas.

VII.WORKING

The smart agriculture monitoring system is tested under various conditions. The soil moisture sensor is used to test the soil for all climatic conditions and results are interpreted successfully. The moisture output readings at different weather conditions is taken and updated. Wi-Fi is used to achieve the wireless transmission. The values of soil moisture sensor purely depend on the resistivity of the soil. The value of the sensor at beginning of wet condition is 0. The sensed value is sent to microcontroller through NodeMCU and motor pump gets OFF in this condition. The maximum threshold value upon dry soil is1023. When the sensed value by sensor reaches the threshold value, the microcontroller trigger the relay and motor gets ON. When sufficient amount of water is supplied to plants, the motor pump is turned ON and is turned OFF automatically

| e-ISSN: 2278 – 8875, p-ISSN: 2320 – 3765| www.ijareeie.com | Impact Factor: 8.317|| A Monthly Peer Reviewed & Referred Journal |

||Volume 13, Issue 4, April 2024||

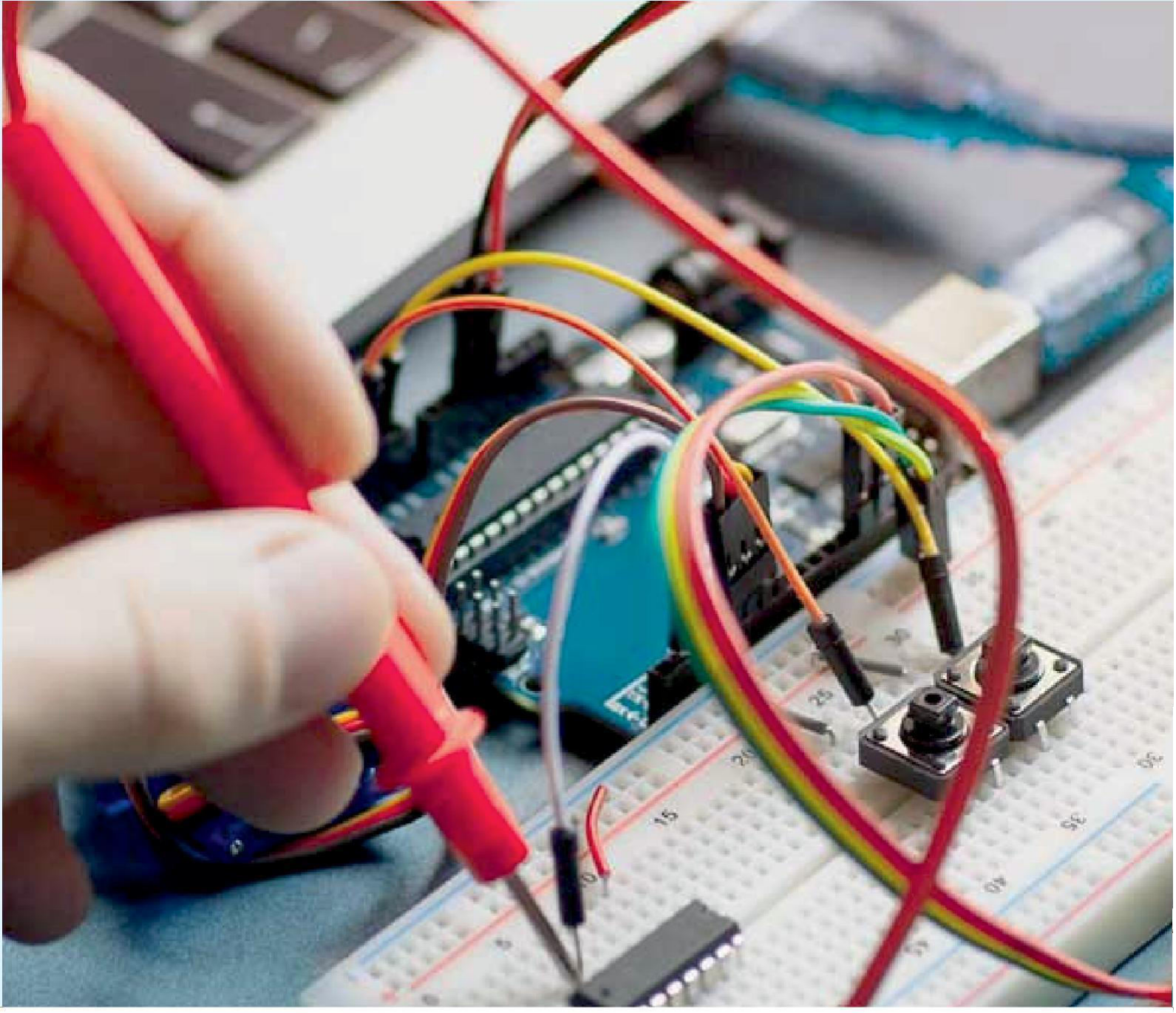
| DOI:10.15662/IJAREEIE.2024.1304027 |

VIII. CONCLUSION

This paper describes automated irrigation system using IOT. Internet on things and cloud computing collectively makes a system that control agriculture sector effectively. This system will sense all the environmental parameters and send the data to the user via cloud. User will take controlling action according to that this will be done by using actuator. This asset allows the farmer to improve the cultivation in a way the plant need. It leads to higher crop yield, prolonged production period, better quality and less use of protective chemicals.

REFERENCES

1) Khattab, Ahmed, et al. "An IoT-based cognitive monitoring system for early plant disease forecast." Computers and Electronics in Agriculture 166 (2019): 105028.
2) Haque, Md Shadman Tajwar, et al. "Design and Implementation of an IoT based Automated Agricultural Monitoring and Control System." 2019 International Conference on Robotics, Electrical and Signal Processing Techniques (ICREST). IEEE, 2019.
3) Ruan, Junhu, et al. "A life cycle framework of green IoT-based agriculture and its finance, operation, and management issues." IEEE communications magazine 57.3 (2019): 90-96.
4) Kamienski, Carlos, et al. "Smart water management platform: Iot-based precision irrigation for agriculture." Sensors 19.2 (2019): 276.
5) Devan, P. Arun Mozhi, et al. "IoT Based Water Usage Monitoring System Using LabVIEW." Smart Technologies and Innovation for a Sustainable Future. Springer, Cham, 2019. 205-212.
6) Sambath, M., et al. "Iot Based Garden Monitoring System." Journal of Physics: Conference Series. Vol. 1362. No. 1. IOP Publishing, 2019.
7) Garg, Bhumika, et al. "IoT based Smart Agriculture Monitoring System." (2019).
8) Asha, H. V., et al. "Smart Agricultural Monitoring System Using Internet of Things." Emerging Research in Computing, Information, Communication and Applications. Springer, Singapore, 2019. 473-482.
9) Raj, Shivang, et al. "IoT based model of automated agricultural system in India." 2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI). IEEE, 2019.
10) Dasgupta, Ajanta, et al. "Smart irrigation: IOT-based irrigation monitoring system." Proceedings of International Ethical Hacking Conference 2018. Springer, Singapore, 2019.



INNO SPACE
SJIF Scientific Journal Impact Factor

doi cross ref

ISSN INTERNATIONAL STANDARD SERIAL NUMBER INDIA

निस्केयर NISCAIR

International Journal of Advanced Research

in Electrical, Electronics and Instrumentation Engineering

9940 572 462 6381 907 438 ijareeie@gmail.com

Scan to save the contact details